

the Yazoo Valley, the average from 31 stations being 11.50 inches, about 6.5 inches above the normal. Only 6 stations reported less than 10 inches. The average precipitation over the valley of the Big Black was 10.15 inches, about 6.1 inches above the normal. The precipitation from 19 stations in the Ouachita Valley averaged 10.48 inches, about 5.8 inches above the normal. All stations over the headwaters of this river in Arkansas except 2 reported more than 10 inches.

Louisiana coastal plain.—Heavy precipitation occurred over the greater portion of this area, the average from 30 stations being 6.84 inches, about 2.8 inches above the normal. More than 10 inches occurred at a few stations.

Monthly precipitation and departures from the normal, in inches, for the various States and parts of States, are reported as follows: Colorado area, 1.36, -0.82; New Mexico area, 0.70, -0.58; Texas area, 3.07, +0.27; Kansas area, 1.90, -0.64; Oklahoma area, 3.09, +0.09; Missouri area, 5.61, +1.46; Tennessee area, 9.56, +4.90; Arkansas area, 9.86, +5.48; Mississippi area, 10.74, +5.21; Louisiana area, 7.58, +3.25.

SNOWFALL.

The snowfall was confined to the more elevated portions of the Colorado and New Mexico areas, and the amounts ranged from a trace to .48 inches. Owing to the high temperatures, the snowfall of the month can not be considered as having added materially to the stock of storage snow in the mountains. The average snowfall, in inches, for the various States and parts of States, derived from the records of such stations as reported snow, is as follows: Colorado area (25 stations), 12.4; New Mexico area (5 stations), 1.7; Kansas area (3 stations), trace; Missouri area (2 stations), trace.

RIVERS.

Low water prevailed in the upper Arkansas River and tributaries, except that there was a 12-foot rise in the lower Neosho on the 5th. The lower Arkansas was unusually low during the first four days of the month. There was a rise after the 4th, but no high stages were recorded. There was sufficient water for navigation after the first few days of the month.

In Oklahoma there was an increased flow in all streams, but no high water or floods were reported.

No floods occurred in the Red River proper, but there was a general increased flow of water over the previous month. Floods occurred in the Sulphur River in Texas and in the Little River in Arkansas during the third decade.

The upper White River was low up to the 12th, but heavy rains on that date and the 13th caused a sudden and rapid rise, and within 54 hours after the morning observation of the 12th the river at Calico Rock rose from 3 feet to a flood stage of 18 feet. At Batesville, the total rise was 14.8 feet in 3 days to a maximum stage of 19.6 feet, 1.6 feet above flood stage, on the 15th. At Newport, the river rose from 8.1 on the 13th to a maximum stage of 24.7 feet on the 19th. The lower White River had been rising since April 4, and when the heavy rains of the 13th-14th occurred the rise became more rapid and a maximum stage of 29 feet was recorded on the 27th. The water began to fall on the 29th.

At Camden, the Ouachita rose from 8 feet on the 1st to 37.4 feet on the 22d, after which there was a steady fall. The lower Ouachita rose at Monroe from 11 feet on the 1st to 33 feet on the 30th.

Below St. Louis the Mississippi rose during the greater part of the month. Flood stages were reached as follows: Memphis, Tenn., on the 18th; Helena, Ark., on the 22d; and Arkansas City, Ark., on the 28th. Flood stages did not occur south of Arkansas City.

SEVERE LOCAL STORMS.

Oklahoma (J. Pemberton Slaughter, section director).—A destructive local storm occurred near Frederick, Tillman County, during the evening of April 10th; 1 person was killed and 4 were injured; the property loss was estimated at \$3,000.

Tornadoes occurred at several points in the east-central and northeastern parts of Oklahoma during the late afternoon and evening of April 12. At Bigheart, Osage County, 3 lives were lost, 2 persons were fatally injured, and about 50 others sustained slight to serious injuries; the property loss was estimated at \$100,000. At Checotah, McIntosh County, 2 persons were killed and about 25 injured; the property loss was estimated at \$15,000. At Sallisaw, Sequoyah County, 1 person was killed and 3 injured; the property damage was estimated at \$10,000. Near Okmulgee, Okmulgee County, 4 persons were injured, 1 fatally; the property loss was estimated at \$4,000 to \$5,000.

Kansas (T. B. Jennings, section director).—A tornado occurred in Cherokee County on the evening of April 12, killing 1 person, injuring 20 others, and causing damage amounting to \$200,000.

Missouri (George Reeder, section director).—High, and in a few cases, damaging, local winds occurred during the afternoon of April 12 and again on the 13th. The storms were severe in Jasper County on the former and in parts of St. Francois and Jefferson Counties on the latter date. In both cases reliable reports by persons in the respective vicinities indicate that the storm partook of the well-known characteristics of the tornado. The storm of the 13th resulted in damage amounting to \$10,000 near Joplin, and to a much greater amount in the county at large, estimated at \$100,000; 1 person was killed near Joplin. On the afternoon of the 13th, between 3 and 4 o'clock, a tornado passed near or through the mining towns of Esther, Flat River, and Elvens, St. Francois County, and Valley Mines, Jefferson County; at the last-named place 3 persons were killed and 45 or more persons were injured; the property loss is estimated to be more than \$100,000. The path of the storm averaged from 250 to 450 feet in width, with a general direction of movement from southwest to northeast.

Arkansas (H. F. Aleciatore, section director).—Tornadoes occurred in Polk and Faulkner Counties on the night of April 13-14. At Wooster, 8 miles north, and at Vilonia, 14 miles east of Conway, several persons were injured and a number of buildings destroyed. Near Plumerville (about 2 miles south) a tornado struck a residence about 1 a. m. of the 14th, while the family was asleep, killing three children and injuring three others. The storm was followed by a heavy downpour of rain, and a number of cabins were blown down in the vicinity and several negroes injured. The telephone lines suffered great damage. At Uniontown, the Independent Telephone Exchange was struck by lightning and destroyed. Near Ozark a freight train was wrecked owing to a washout; 9 cars went into the ditch, but no one was injured. At Mena, Polk County, a tornado swept over the town about 9.15 p. m. of the 13th, apparently moving from west to east. No funnel-shaped cloud was observed, but the rotary motion of the wind was indicated by the posi-

tions of prostrated objects. Mr. R. R. St. John, cooperative observer, states that the path varied from 50 to 500 feet in width. No one was killed, but 2 persons were slightly injured. The loss to buildings, household goods, and merchandise was about \$30,000. The tornado's behavior was peculiar. In one place a barn was lifted from the ground, turned bottom side up, and dropped as a mass of wreckage over its old foundation. A two-story house was thrown on its side to the south. On the other side of the street, 60 feet in width, a building was thrown to the north, and next to that another building was moved to the west. At places along the path great variations in force were shown, as in the wrecking of a substantial building while another similar and adjoining building suffered but little damage.

Buildings were leveled and trees blown down in such irregular manner as to lead to the belief that at times the lower portion of the storm cloud did not reach to the ground, but swung around, dipping downward here and there, destroying one building and passing over an adjoining one.

Mississippi (J. H. Scott, section director).—A local storm possessing some characteristics of a tornado passed through the northern portion of Kemper County about 4.30 a. m. April 20, moving in a northeasterly direction. So far as could be learned the only damage to buildings occurred in the vicinity of Wahalak Hill, where a storehouse was blown down and other buildings injured. Damage also occurred to timber and fencing, but there was no loss of life and no personal injury. The total property damage is estimated not to exceed \$2,000.

Considerable damage was done to piers and small craft along the coast by the wind and rain storm of the 26th, which continued through the night of the 26-27th. Traffic was interrupted on the Louisville & Nashville

Railroad and washouts occurred on the Gulfport & Mississippi Traction Co.'s line, which parallels the beach from Biloxi to Pass Christian.

NOTES.

Valley, N. Mex.—The weather was windy, dry, and cool. The ground is too dry to admit of plowing or planting.

Plemons, Tex.—Light frosts occurred on the 7th.

Tulia, Tex.—Farm work is well up. Pasturage is good and cattle are in good condition. A severe hailstorm in Briscoe County killed full-grown cattle. Hail fell on the 2d, 10th, and 23d. Light frost occurred on the 16th.

Winfield, Tex.—Wet weather has interfered with farming operations. Very little cotton has been planted, and corn needs cultivation.

Oklahoma (J. Pemberton Slaughter, section director).—On the whole, weather conditions were favorable. Freezing occurred in the northwestern counties and frost temperatures over the remainder of the State during the first half of the month, but there was no material damage by frost.

Kansas (T. B. Jennings, section director).—Weather conditions were favorable for outdoor work.

Missouri (George Reeder, section director).—Moderately low temperature caused the season to open later than for several years. Conditions have been favorable for fruit and vegetable growth.

Mississippi (J. H. Scott, section director).—As a result of the heavy rains uplands were badly washed, especially where recently plowed. Light hail fell in scattered localities on different dates. Frost formed at a few northern stations on the 9th and 10th, but no damage resulted therefrom.